

1. A compound of formula (1):



R¹ and R² are the same or different and are selected from the group consisting of hydrogen atoms, hydroxyl protecting groups, phosphate groups, protected phosphate groups and group of formula -P(R³)R⁴, wherein R³ and R⁴ are the same or different and are selected from the group consisting of hydroxyl groups, protected hydroxyl groups, mercapto groups, protected mercapto groups, amino groups, alkoxy groups having from 1 to 4 carbon atoms, alkylthio groups having from 1 to 4 carbon atoms, cyanoalkoxy groups having from 1 to 5 carbon atoms and amino groups substituted by an alkyl group having from 1 to 4 carbon atoms;

B is selected from the group consisting of unsubstituted purin-9-yl groups, unsubstituted 2-oxo-pyrimidin-1-yl groups, and substituted purin-9-yl groups and substituted 2-oxo-pyrimidin-1-yl groups having at least one substituent α selected from the group consisting of

hydroxyl groups,
protected hydroxyl groups,
alkoxy groups having from 1 to 4 carbon atoms,
mercapto groups,
protected mercapto groups,
alkylthio groups having from 1 to 4 carbon atoms,
amino groups,
protected amino groups,
amino groups substituted by an alkyl group having from 1 to 4 carbon atoms,
alkyl groups having from 1 to 4 carbon atoms and
halogen atoms;

or a salt thereof.

2. The compound according to Claim 1 or a salt thereof, wherein R^1 is selected from the group consisting of hydrogen atoms, aliphatic acyl groups, aromatic acyl groups, methyl groups substituted by from 1 to 3 aryl groups, methyl groups substituted by from 1 to 3 aryl groups the aryl ring of which is substituted by a substituent selected from the group consisting of lower alkyl, lower alkoxy, halogen and cyano groups, and silyl groups.

3. The compound according to Claim 1 or a salt thereof, wherein R^1 is selected from the group consisting of hydrogen atoms, acetyl groups, benzoyl groups, benzyl groups, p-methoxybenzyl groups, dimethoxytrityl groups, mono-methoxytrityl groups and tert-butyldiphenylsilyl groups.

4. The compound according to Claim 1 or a salt thereof, wherein R^2 is selected from the group consisting of hydrogen atoms, aliphatic acyl groups, aromatic acyl groups, methyl groups substituted by from 1 to 3 aryl groups, methyl groups substituted by from 1 to 3 aryl groups the aryl ring of which is substituted by a substituent selected from the group consisting of lower alkyl, lower alkoxy, halogen and cyano groups, silyl groups, phosphoramidite groups, phosphonyl groups, phosphate groups and protected phosphate groups.

5. The compound according to Claim 2 or a salt thereof, wherein R^2 is selected from the group consisting of hydrogen atoms, aliphatic acyl groups, aromatic acyl groups, methyl groups substituted by from 1 to 3 aryl groups, methyl groups substituted by from 1 to 3 aryl groups the aryl ring of which is substituted by a substituent selected from the group consisting of lower alkyl, lower alkoxy, halogen and cyano groups, silyl groups, phosphoramidite groups, phosphonyl groups, phosphate groups and protected phosphate groups.

6. The compound according to Claim 3 or a salt thereof, wherein R^2 is selected from the group consisting of hydrogen atoms, aliphatic acyl groups, aromatic acyl groups, methyl groups substituted by from 1 to 3 aryl groups, methyl groups substituted by from 1 to 3 aryl groups the aryl ring of which is substituted by a substituent selected

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from the group consisting of lower alkyl, lower alkoxy, halogen and cyano groups, silyl groups, phosphoramidite groups, phosphonyl groups, phosphate groups and protected phosphate groups.

7. The compound according to Claim 1 or a salt thereof, wherein R^2 is selected from the group consisting of hydrogen atoms, acetyl groups, benzoyl groups, benzyl groups, p-methoxybenzyl groups, tert-butyldiphenylsilyl groups,

$-P(OC_2H_4CN)(NCH(CH_3)_2)$, $-P(OCH_3)(NCH(CH_3)_2)$, phosphonyl groups,

2-chlorophenyl phosphate groups and 4-chlorophenyl phosphate groups.

8. The compound according to Claim 2 or a salt thereof, wherein R^2 is selected from the group consisting of hydrogen atoms, acetyl groups, benzoyl groups, benzyl groups, p-methoxybenzyl groups, tert-butyldiphenylsilyl groups,

$-P(OC_2H_4CN)(NCH(CH_3)_2)$, $-P(OCH_3)(NCH(CH_3)_2)$, phosphonyl groups,

2-chlorophenyl phosphate groups and 4-chlorophenyl phosphate groups.

9. The compound according to Claim 3 or a salt thereof, wherein R^2 is selected from the group consisting of hydrogen atoms, acetyl groups, benzoyl groups, benzyl groups, p-methoxybenzyl groups, tert-butyldiphenylsilyl group,

$-P(OC_2H_4CN)(NCH(CH_3)_2)$, $-P(OCH_3)(NCH(CH_3)_2)$, phosphonyl groups,

2-chlorophenyl phosphate groups and 4-chlorophenyl phosphate groups.

10. The compound according to Claim 1 or a salt thereof, wherein A is a methylene group.

11. The compound according to Claim 2 or a salt thereof, wherein A is a methylene group.

12. The compound according to Claim 3 or a salt thereof, wherein A is a methylene group.

13. The compound according to Claim 4 or a salt thereof, wherein A is a methylene group.

14. The compound according to Claim 5 or a salt thereof, wherein A is a methylene group.
15. The compound according to Claim 6 or a salt thereof, wherein A is a methylene group.
16. The compound according to Claim 7 or a salt thereof, wherein A is a methylene group.
17. The compound according to Claim 8 or a salt thereof, wherein A is a methylene group.
18. The compound according to Claim 9 or a salt thereof, wherein A is a methylene group.
19. The compound according to Claim 1 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl (i.e., cytosinyl), 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

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20. The compound according to Claim 2 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

21. The compound according to Claim 3 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl,

2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl groups, the amino group of which is protected.

22. The compound according to Claim 4 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

23. The compound according to Claim 5 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino

group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

24. The compound according to Claim 6 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

25. The compound according to Claim 7 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of

which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

26. The compound according to Claim 8 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl,

4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and
4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is
protected.

27. The compound according to Claim 9 or a salt thereof, wherein B is selected from
the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of
which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl,
2-amino-6-chloropurin-9-yl, the amino group of which is protected,
2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is
protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group
of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl,
the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino
group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl,
6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl,
2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl,
2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected,
2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the
amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl,
2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl,
2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl,
4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and
4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is
protected.

28. The compound according to Claim 10 or a salt thereof, wherein B is selected
from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group
of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl,
2-amino-6-chloropurin-9-yl, the amino group of which is protected,
2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is
protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group
of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl,
the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino
group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl,
6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl,

2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

29. The compound according to Claim 11 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

30. The compound according to Claim 12 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected,

2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

31. The compound according to Claim 13 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is

protected.

32. The compound according to Claim 14 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

33. The compound according to Claim 15 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected,

2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

34. The compound according to Claim 16 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

35. The compound according to Claim 17 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group

of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

36. The compound according to Claim 18 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diaminopurin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloropurin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

37. The compound according to Claim 1 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

38. The compound according to Claim 2 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

39. The compound according to Claim 3 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

40. The compound according to Claim 4 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

41. The compound according to Claim 5 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

42. The compound according to Claim 6 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

43. The compound according to Claim 7 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

44. The compound according to Claim 8 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

45. The compound according to Claim 9 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

46. The compound according to Claim 10 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and

47. The compound according to Claim 11 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

48. The compound according to Claim 12 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

49. The compound according to Claim 13 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

50. The compound according to Claim 14 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

51. The compound according to Claim 15 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl,

2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

52. The compound according to Claim 16 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

53. The compound according to Claim 17 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

54. The compound according to Claim 18 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

55. A compound or a salt thereof selected from the group consisting of
 2'-O,4'-C-ethyleneguanosine,
 2'-O,4'-C-ethyleneadenosine,
 3',5'-di-O-benzyl-2'-O,4'-C-ethylene-6-N-benzoyladenosine,
 3',5'-di-O-benzyl-2'-O,4'-C-ethylene-2-N-isobutyrylguanosine,
 5'-O-dimethoxytrityl-2'-O,4'-C-ethylene-6-N-benzoyladenosine,
 5'-O-dimethoxytrityl-2'-O,4'-C-ethylene-2-N-isobutyrylguanosine,
 2'-O,4'-C-ethylene-2-N-isobutyrylguanosine,
 2'-O,4'-C-ethylene-6-N-benzoyladenosine,
 5'-O-dimethoxytrityl-2'-O,4'-C-ethylene-6-N-benzoyladenosine-3'-O-(2-cyanoethyl

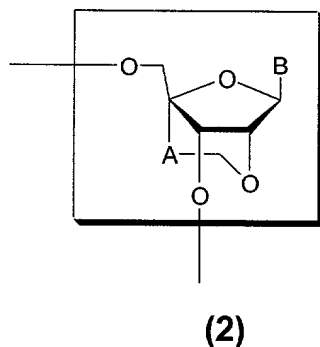
N,N-diisopropyl)phosphoramidite,
 5'-O-dimethoxytrityl-2'-O,4'-C-ethylene-2-N-isobutyrylguanosine-3'-O-(2-cyanoethyl
 N,N-diisopropyl)phosphoramidite,
 2'-O,4'-C-ethylenuridine,
 2'-O,4'-C-ethylene-5-methyluridine,
 2'-O,4'-C-ethylenecytidine,
 2'-O,4'-C-ethylene-5-methylcytidine,
 3',5'-di-O-benzyl-2'-O,4'-C-ethylenuridine,
 5'-O-dimethoxytrityl-2'-O,4'-C-ethylenuridine,
 3',5'-di-O-benzyl-2'-O,4'-C-ethylene-5-methyluridine,
 5'-O-dimethoxytrityl-2'-O,4'-C-ethylene-5-methyluridine,
 3',5'-di-O-benzyl-2'-O,4'-C-ethylene-4-N-benzoylcytidine,
 5'-O-dimethoxytrityl-2'-O,4'-C-ethylene-4-N-benzoylcytidine,
 3',5'-di-O-benzyl-2'-O,4'-C-ethylene-4-N-benzoyl-5-methylcytidine,
 5'-O-dimethoxytrityl-2'-O,4'-C-ethylene-4-N-benzoyl-5-methylcytidine,
 2'-O,4'-C-ethylene-4-N-benzoylcytidine,
 2'-O,4'-C-ethylene-4-N-benzoyl-5-methylcytidine,
 5'-O-dimethoxytrityl-2'-O,4'-C-ethylene-uridine-3'-O-(2-cyanoethyl
 N,N-diisopropyl)phosphoramidite,
 5'-O-dimethoxytrityl-2'-O,4'-C-ethylene-5-methyluridine-3'-O-(2-cyanoethyl
 N,N-diisopropyl)phosphoramidite,
 5'-O-dimethoxytrityl-2'-O,4'-C-ethylene-4-N-benzoylcytidine-3'-O-(2-cyanoethyl
 N,N-diisopropyl)phosphoramidite, and
 5'-O-dimethoxytrityl-2'-O,4'-C-ethylene-4-N-benzoyl-5-methylcytidine-3'-O-(2-cyano
 ethyl N,N-diisopropyl)phosphoramidite.

56. 5'-O-Dimethoxytrityl-2'-O,4'-C-ethylene-5-methyluridine-3'-O-(2-cyanoethyl
 N,N-diisopropyl)phosphoramidite or a salt thereof.

57. 5'-O-Dimethoxytrityl-2'-O,4'-C-ethylene-6-N-benzoyladenosine-3'-O-
 (2-cyanoethyl N,N-diisopropyl)phosphoramidite or a salt thereof.

58. 5'-O-Dimethoxytrityl-2'-O,4'-C-ethylene-2-N-isobutyrylguanosine-3'-O-
 (2-cyanoethyl N,N-diisopropyl)phosphoramidite or a salt thereof.

59. 5'-O-Dimethoxytrityl-2'-O,4'-C-ethylene-uridine-3'-O-(2-cyanoethyl N,N-diisopropyl)phosphoramidite or a salt thereof.
60. 5'-O-Dimethoxytrityl-2'-O,4'-C-ethylene-4-N-benzoylcytidine-3'-O-(2-cyanoethyl N,N-diisopropyl)phosphoramidite or a salt thereof.
61. 5'-O-Dimethoxytrityl-2'-O,4'-C-ethylene-4-N-benzoyl-5-methylcytidine-3'-O-(2-cyanoethyl N,N-diisopropyl)phosphoramidite or a salt thereof.
62. An oligonucleotide analogue comprising two or more nucleoside units wherein at least one of said nucleoside units is a structure of the formula (2):



wherein:

A represents an alkylene group having from 1 to 4 carbon atoms; and

B is selected from the group consisting of an unsubstituted purin-9-yl group, an unsubstituted 2-oxo-pyrimidin-1-yl group, a purin-9-yl group substituted with at least one substituent α and a 2-oxo-pyrimidin-1-yl group substituted with at least one substituent α , said substituent α being selected from the group consisting of

- an unprotected hydroxyl group,
- a protected hydroxyl group,
- an alkoxy group having from 1 to 4 carbon atoms,
- an unprotected mercapto group,
- a protected mercapto group,
- an alkylthio group having from 1 to 4 carbon atoms,
- an unprotected amino group,

a protected amino group,
 an amino group substituted by an alkyl group having from 1 to 4 carbon atoms,
 an alkyl group having from 1 to 4 carbon atoms and
 a halogen atom;
 or a salt thereof.

63. The oligonucleotide analogue according to claim 62 or a salt thereof, which comprises up to 100 nucleoside units and wherein nucleoside units are bonded to each other through a phosphodiester bond or a phosphorothioate bond.

64. The oligonucleotide analogue according to claim 62 or a salt thereof which comprises 2 to 50 nucleoside units; and when said oligonucleotide analogue contains two or more nucleoside units of the structure of said formula (2), said nucleoside units of the structure of formula (2) are the same or different, and wherein said salt is a pharmaceutically acceptable salt.

65. The oligonucleotide analogue according to claim 64 or a salt thereof which comprises 10 to 30 nucleoside units.

66. The oligonucleotide analogue according to claim 62 or a salt thereof, wherein said nucleoside units are bonded to each other through a phosphoric acid diester bond or a phosphorothioate bond.

67. The oligonucleotide analogue according to Claim 62 or a salt thereof, wherein A is a methylene group.

68. The oligonucleotide analogue according to Claim 62 or a salt thereof, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diamino-purin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl,

2-amino-6-hydroxypurin-9-yl, the amino group of which is protected,
 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are
 protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl,
 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloro-purin-9-yl,
 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl,
 the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl,
 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected,
 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl,
 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl,
 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl
 group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which
 is protected.

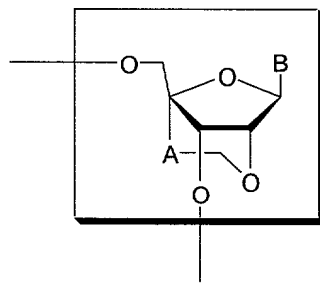
69. The oligonucleotide analogue according to Claim 67 or a salt thereof, wherein B
 is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the
 amino group of which is protected, 2,6-diamino-purin-9-yl,
 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is
 protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group
 of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the
 amino group of which is protected, 2-amino-6-hydroxypurin-9-yl,
 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected,
 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are
 protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl,
 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloro-purin-9-yl,
 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl,
 the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl,
 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected,
 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl,
 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl,
 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl
 group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which
 is protected.

70. The oligonucleotide analogue according to Claim 62 or a salt thereof, wherein B

is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyridin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

71. The oligonucleotide analogue according to Claim 67 or a salt thereof, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyridin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

72. A pharmaceutical composition comprising a pharmaceutically effective amount of a pharmacologically active compound together with a carrier therefor, wherein said pharmacologically active compound is an oligonucleotide analogue comprising two or more nucleoside units, wherein at least one of said nucleoside units is a structure of the formula (2):



(2)

wherein:

A represents an alkylene group having from 1 to 4 carbon atoms; and

B is selected from the group consisting of an unsubstituted purin-9-yl group, an unsubstituted 2-oxo-pyrimidin-1-yl group, a purin-9-yl group substituted with at least one substituent α and a 2-oxo-pyrimidin-1-yl group substituted with at least one substituent α , said substituent α being selected from the group consisting of an unprotected hydroxyl group,

a protected hydroxyl group,
 an alkoxy group having from 1 to 4 carbon atoms,
 an unprotected mercapto group,
 a protected mercapto group,
 an alkylthio group having from 1 to 4 carbon atoms,
 an unprotected amino group,
 a protected amino group,
 an amino group substituted by an alkyl group having from 1 to 4 carbon atoms,
 an alkyl group having from 1 to 4 carbon atoms and
 a halogen atom;
 or a pharmacologically acceptable salt thereof.

73. A pharmaceutical composition according to Claim 72, wherein A is a methylene group.

74. A pharmaceutical composition according to Claim 72, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diamino-purin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloro-purin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is

protected.

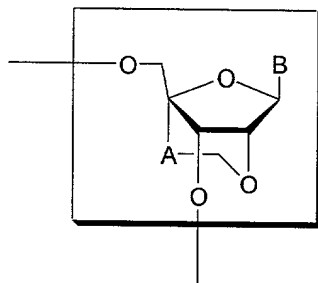
75. A pharmaceutical composition according to Claim 73, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diamino-purin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloro-purin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

76. A pharmaceutical composition according to Claim 72, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyridin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

77. A pharmaceutical composition according to Claim 73, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyridin-1-yl, 5-methylcytosinyl, uraciny and

thyminy groups.

78. A probe for a gene comprising an oligonucleotide analogue comprising two or more nucleoside units, wherein at least one of said nucleoside units is a structure of the formula (2):



(2)

wherein:

A represents an alkylene group having from 1 to 4 carbon atoms; and
B is selected from the group consisting of an unsubstituted purin-9-yl group, an unsubstituted 2-oxo-pyrimidin-1-yl group, a purin-9-yl group substituted with at least one substituent α and a 2-oxo-pyrimidin-1-yl group substituted with at least one substituent α , said substituent α being selected from the group consisting of

- an unprotected hydroxyl group,
- a protected hydroxyl group,
- an alkoxy group having from 1 to 4 carbon atoms,
- an unprotected mercapto group,
- a protected mercapto group,
- an alkylthio group having from 1 to 4 carbon atoms,
- an unprotected amino group,
- a protected amino group,
- an amino group substituted by an alkyl group having from 1 to 4 carbon atoms,
- an alkyl group having from 1 to 4 carbon atoms and
- a halogen atom;
- or a salt thereof.

79. A probe for a gene according to Claim 78, wherein A is a methylene group.

80. A probe for a gene according to Claim 78, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diamino-purin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloro-purin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

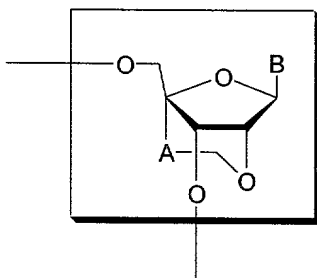
81. A probe for a gene according to Claim 79, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diamino-purin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloro-purin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected,

2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

82. A probe for a gene according to Claim 78, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyridin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

83. A probe for a gene according to Claim 79, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyridin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

84. A primer for starting amplification comprising an oligonucleotide analogue comprising two or more nucleoside units, wherein at least one of said nucleoside units is a structure of the formula (2):



(2)

wherein:

A represents an alkylene group having from 1 to 4 carbon atoms; and

B is selected from the group consisting of an unsubstituted purin-9-yl group, an unsubstituted 2-oxo-pyrimidin-1-yl group, a purin-9-yl group substituted with at least one substituent α and a 2-oxo-pyrimidin-1-yl group substituted with at least one substituent α , said substituent α being selected from the group consisting of

- an unprotected hydroxyl group,
- a protected hydroxyl group,
- an alkoxy group having from 1 to 4 carbon atoms,
- an unprotected mercapto group,
- a protected mercapto group,
- an alkylthio group having from 1 to 4 carbon atoms,
- an unprotected amino group,
- a protected amino group,
- an amino group substituted by an alkyl group having from 1 to 4 carbon atoms,
- an alkyl group having from 1 to 4 carbon atoms and
- a halogen atom;
- or a salt thereof.

85. A primer for starting amplification according to Claim 84, wherein A is a methylene group.

86. A primer for starting amplification according to Claim 84, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diamino-purin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl,

2,6-dichloro-purin-9-yl, 6-mercaptapurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

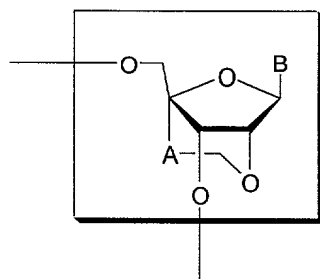
87. A primer for starting amplification according to Claim 85, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diamino-purin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloro-purin-9-yl, 6-mercaptapurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

88. A primer for starting amplification according to Claim 84, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl,

2-oxo-5-methyl-4-benzoylamino-pyridin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

89. A primer for starting amplification according to Claim 85, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyridin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

90. A method for the prevention or treatment in a mammal of a disease preventable or treatable by the pharmacologically useful antisense activity of an oligonucleotide analogue or a pharmacologically acceptable salt thereof in the body of said mammal, which method comprises administering to said mammal in need of such prevention or treatment a pharmaceutically effective amount of an oligonucleotide analogue comprising two or more nucleoside units, wherein at least one of said nucleoside units is a structure of the formula (2):



(2)

wherein:

A represents an alkylene group having from 1 to 4 carbon atoms; and

B is selected from the group consisting of an unsubstituted purin-9-yl group, an unsubstituted 2-oxo-pyrimidin-1-yl group, a purin-9-yl group substituted with at least one substituent α and a 2-oxo-pyrimidin-1-yl group substituted with at least one substituent α , said substituent α being selected from the group consisting of

an unprotected hydroxyl group,

a protected hydroxyl group,

an alkoxy group having from 1 to 4 carbon atoms,
 an unprotected mercapto group,
 a protected mercapto group,
 an alkylthio group having from 1 to 4 carbon atoms,
 an unprotected amino group,
 a protected amino group,
 an amino group substituted by an alkyl group having from 1 to 4 carbon atoms,
 an alkyl group having from 1 to 4 carbon atoms and
 a halogen atom;
 or a pharmacologically acceptable salt thereof.

91. A method according to Claim 90, wherein A is a methylene group.

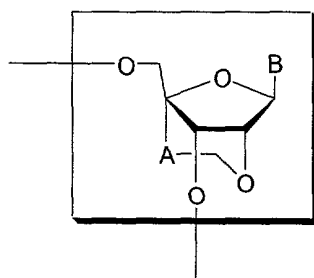
92. A method according to Claim 90, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diamino-purin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloro-purin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

93. A method according to Claim 91, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diamino-purin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloro-purin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

94. A method according to Claim 90, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

95. A method according to Claim 91, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyrimidin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

96. A method for the prevention or treatment in a mammal of a disease preventable or treatable by the pharmacologically useful antigene activity of an oligonucleotide analogue or a pharmacologically acceptable salt thereof in the body of said mammal, which method comprises administering to said mammal in need of such prevention or treatment a pharmaceutically effective amount of an oligonucleotide analogue comprising two or more nucleoside units, wherein at least one of said nucleoside units is a structure of the formula (2):



(2)

wherein:

A represents an alkylene group having from 1 to 4 carbon atoms; and

B is selected from the group consisting of an unsubstituted purin-9-yl group, an unsubstituted 2-oxo-pyrimidin-1-yl group, a purin-9-yl group substituted with at least one substituent α and a 2-oxo-pyrimidin-1-yl group substituted with at least one substituent α , said substituent α being selected from the group consisting of

- an unprotected hydroxyl group,
- a protected hydroxyl group,
- an alkoxy group having from 1 to 4 carbon atoms,
- an unprotected mercapto group,
- a protected mercapto group,
- an alkylthio group having from 1 to 4 carbon atoms,
- an unprotected amino group,
- a protected amino group,
- an amino group substituted by an alkyl group having from 1 to 4 carbon atoms,
- an alkyl group having from 1 to 4 carbon atoms and
- a halogen atom;

or a pharmacologically acceptable salt thereof.

97. A method according to Claim 96, wherein A is a methylene group.

98. A method according to Claim 96, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diamino-purin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl, 2,6-dichloro-purin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

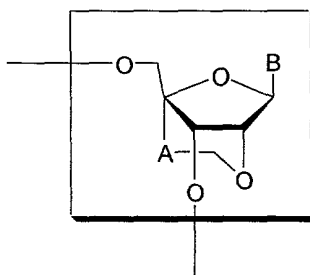
99. A method according to Claim 97, wherein B is selected from the group consisting of 6-aminopurin-9-yl, 6-aminopurin-9-yl, the amino group of which is protected, 2,6-diamino-purin-9-yl, 2-amino-6-chloropurin-9-yl, 2-amino-6-chloropurin-9-yl, the amino group of which is protected, 2-amino-6-fluoropurin-9-yl, 2-amino-6-fluoropurin-9-yl, the amino group of which is protected, 2-amino-6-bromopurin-9-yl, 2-amino-6-bromopurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, 2-amino-6-hydroxypurin-9-yl, the amino group of which is protected, 2-amino-6-hydroxypurin-9-yl, the amino group and hydroxyl group of which are protected, 6-amino-2-methoxypurin-9-yl, 6-amino-2-chloropurin-9-yl, 6-amino-2-fluoropurin-9-yl, 2,6-dimethoxypurin-9-yl,

2,6-dichloro-purin-9-yl, 6-mercaptopurin-9-yl, 2-oxo-4-amino-pyrimidin-1-yl, 2-oxo-4-amino-pyrimidin-1-yl, the amino group of which is protected, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, 2-oxo-4-amino-5-fluoro-pyrimidin-1-yl, the amino group of which is protected, 4-amino-2-oxo-5-chloro-pyrimidin-1-yl, 2-oxo-4-methoxy-pyrimidin-1-yl, 2-oxo-4-mercapto-pyrimidin-1-yl, 2-oxo-4-hydroxy-pyrimidin-1-yl, 2-oxo-4-hydroxy-5-methylpyrimidin-1-yl, 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group and 4-amino-5-methyl-2-oxo-pyrimidin-1-yl group, the amino group of which is protected.

100. A method according to Claim 96, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyridin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

101. A method according to Claim 97, wherein B is selected from the group consisting of 6-benzoylamino-purin-9-yl, adeninyl, 2-isobutyrylamino-6-hydroxypurin-9-yl, guaninyl, 2-oxo-4-benzoylamino-pyrimidin-1-yl, cytosinyl, 2-oxo-5-methyl-4-benzoylamino-pyridin-1-yl, 5-methylcytosinyl, uraciny and thyminy groups.

102. In an antisense oligonucleotide comprising two to one hundred nucleoside units, the improvement comprising at least one of said nucleoside units having a structure of the formula (2)



(2)

, said nucleoside units being bonded through a phosphodiester bond or a phosphorothiate bond, wherein:

A represents an alkylene group having from 1 to 4 carbon atoms; and

B is selected from the group consisting of an unsubstituted purin-9-yl group, an unsubstituted 2-oxo-pyrimidin-1-yl group, a purin-9-yl group substituted with at least one substituent α and a 2-oxo-pyrimidin-1-yl group substituted with at least one substituent α , said substituent α being selected from the group consisting of

- an unprotected hydroxyl group,
- a protected hydroxyl group,
- an alkoxy group having from 1 to 4 carbon atoms,
- an unprotected mercapto group,
- a protected mercapto group,
- an alkylthio group having from 1 to 4 carbon atoms,
- an unprotected amino group,
- a protected amino group,
- an amino group substituted by an alkyl group having from 1 to 4 carbon atoms,
- an alkyl group having from 1 to 4 carbon atoms and
- a halogen atom;
- or a salt thereof.